

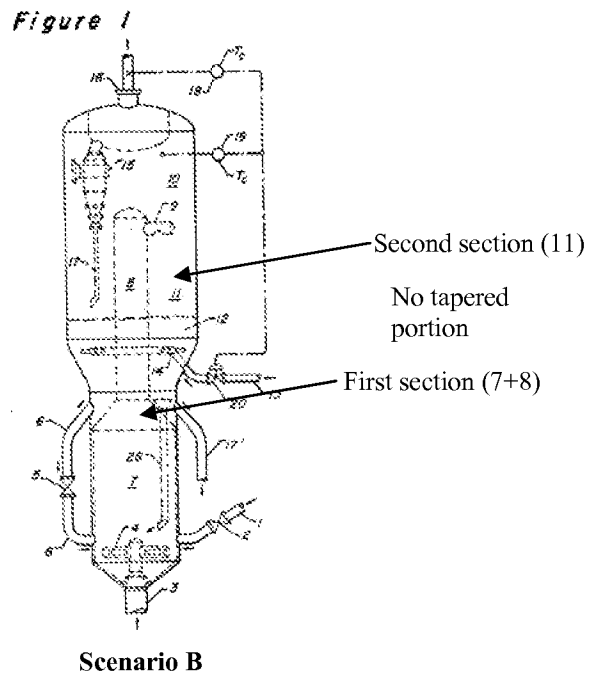
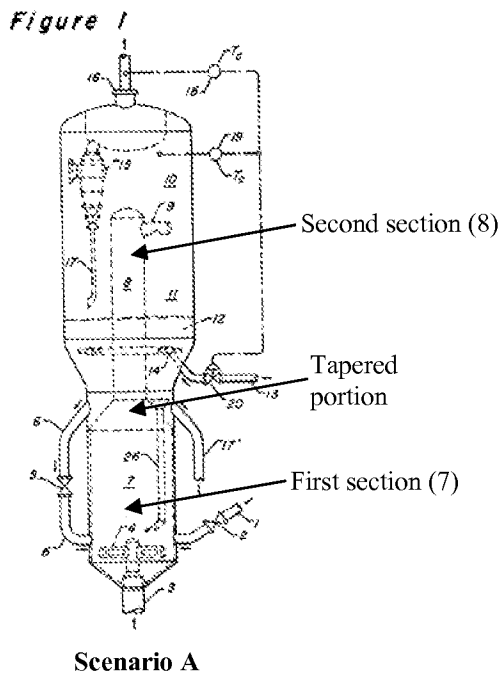
REMARKS/ARGUMENTS

I. Rejection of Claims Under 35 USC §102

The Office rejected claims 1-2, and 4-10 as being anticipated under 35 USC §102(b) by US4849091 to Cabrera et al. The applicant respectfully disagrees.

As amended, claim 1 expressly requires that the "... second width is greater than the first width...", which is neither taught nor suggested by Cabrera.

Moreover, the examiner appeared to argue that the tapered transition portion between the first and second sections would be the transitional portion between space (7) and (8) of Figure 1 (Office action page 2, last complete sentence, and page 14, third sentence). The applicant agrees that Cabrera has a tapered portion between spaces (7) and (8), however, notes that spaces (7) and (8) were identified by the examiner as being the first section (Office action page 2: "...The regenerator has a first section (7 and 8) which receives..."). The office also appears to argue that the second section would be the "second disengagement space (11). Such identification is problematic as only two scenarios are possible:



In Scenario A, space (7) is the first section and space (8) is the second section. Only here does a tapered transition portion couple a first section to a second section to form a continuous

reactor vessel as required in the claims. However, such scenario runs afoul with the claimed elements for various reasons: The second section has a width that is smaller than the first section, and there is no oxygen-containing gas in the second section, let alone at a residence time that would be effective to produce carbon dioxide from the carbon monoxide.

In Scenario B, the first section is formed by space (7) and space (8), and the second section is the disengagement space 11. However, in such scenario there is no continuous reactor vessel formed. Moreover, it should be readily apparent that there is also no tapered transition portion that couples the first section to the second section.

Based on at least these considerations, it should also be clear that the device of Cabrera can not be capable of operating within the limitations of the claims, even if one would vary flow rates, space velocities, and entrance gas constituents. Therefore, in light of the amendments presented herein, the rejection of claims 1-2 and 4-10 as being anticipated by Cabrera et al. should be withdrawn.

II. Rejection of Claims Under 35 USC §103

(1) The Office rejected claims 13, and 15-19 as being obvious under 35 USC §103 over US4849091 to Cabrera et al. in view of US4375404 to Myers. The applicant again respectfully disagrees.

First, as already noted above, the cited reference *fails to teach the elements* as presently claimed. Second, Cabrera also expressly teaches the initial separation of catalyst effected by the disengaging device (9) allows operation of the upper section of the regenerator at *higher gas velocities*, which is clearly contrary to the claimed subject matter. As a consequence of such disengagement of the catalyst and the regeneration gas, *Cabrera requires feeding of additional oxygen or regeneration gas* to balance the oxygen requirements between completion of the regeneration reaction and reduction in temperature.

Regarding Myers, it is entirely unclear to the applicant what the office intends to convey. The examiner noted that one of ordinary skill in the art "...would have been motivated to add chlorine to the regenerator to raise the ratio of CO to CO₂...". First, it is noted that the present claims, and indeed the entire application is devoid of any reference to addition of chlorine.

Second, the office further asserted that addition of chlorine "...results in an increase in the CO/CO₂ ratio and a concomitant decrease in the heat produced..." However, such statement is factually incorrect as applied to the instant regeneration. Indeed, an increase in CO/CO₂ ratio will necessarily increase the temperature as the reaction of CO->CO₂ provides the bulk of heat that is produced (see application page 17, lines 19-22, or page 4, lines 18-21).

Therefore, it should be pointed out that Cabrera fails to teach all of the elements of the claimed subject matter, and indeed even teaches against the claimed configurations and methods. Myers fails to remedy these defects as Myer's is entirely irrelevant to the claimed subject matter.

Finally, the office noted that absent of any reference to the criticality of the temperature conditions, a difference in temperature ranges would not support patentability. The applicant points to the specification, page 9, lines 7-10, and page 18, lines 1-4, where the criticality of the claimed ranges is readily apparent. The configurations and methods according to the inventive subject matter allows for significant enhancement of reaction kinetics and preservation of catalyst and enables at the same time use of mild steel equipment. Such advantages are far from being trivial.

Therefore, the rejection of claims 13, and 15-19 as being obvious under 35 USC §103 over US4849091 to Cabrera et al. in view of US4375404 to Myers is improper and should be withdrawn.

(2) The Office rejected claims 3 and 12 as being obvious under 35 USC §103 over Cabrera et al. in view of US 4991521 to Green and US 4313848 to Scott . The applicant again respectfully disagrees.

With respect to claim 3 it is noted that since claim 3 depends on amended claim 1, the same considerations and defects with regard to Cabrera as detailed above for claim 1 apply and are not reiterated here. Green and Scott fail to remedy these defects. Indeed, it should be noted that Cabrera teaches against any modification as discussed by Green and Scott. Specifically, Cabrera points out that:

"...each stream of regeneration gas only contacts the catalyst in one regeneration zone. Hence, regeneration gas from one zone does not interfere with the operations taking place in another zone.

In stacked regeneration zones of the past the passage of regeneration gas from one zone to another zone interferes with control of coke combustion or regeneration temperature...." (e.g., column 10, lines 9-13).

Thus, the proposed modification of Cabrera's device using elements of Green and Scott is improper. The applicant appreciates the office's response to the above argument, however, disagrees with the examiner's assertion for various reasons. Most significantly, the teachings of Green and Scott can not be taken out of context with respect to the operating conditions. Green employs a continuous regeneration sequence in which a two-stage fluidized bed is operated for catalyst regeneration. Clearly, the dimensional parameters are of importance. In contrast, it is noted that Cabrera's device separates regeneration zones and as such renders the dimensions of one zone independent from the other. Scott employs a regenerator where two entirely different contaminants, nitrogen-containing contaminants and carbon-containing contaminants, are removed from the catalysts in two separate zones. As the different contaminants have different reaction kinetics, it is imperative to control those zones. However, such design considerations are immaterial to Cabrera as that reference only deals with carbon-contaminants. Therefore, the rejection of claim 3 is improper and should be withdrawn.

Similarly, with respect to claim 12 it is noted that Cabrera fails to properly apply for reasons discussed in the rejection of claims 1-2, and 4-10 above. Green and Scott once more fail to remedy these defects. Moreover, and yet again, it is noted that there is absolutely nothing in green and Scott that would provide motivation to modify Cabrera as noted by the office. The discussions in Green and Scott are directly related to their respective design and chemistry and bear no relevance to Cabrera. Therefore, the rejection of claim 12 is improper and should be withdrawn.

(3) The Office rejected claim 11 as being obvious under 35 USC §103 over Cabrera et al. as applied to claims 1 and 13 in view of US 4313848 to Scott . The applicant again respectfully disagrees. Once more, it is noted that Cabrera is defective for reasons as discussed above in the rejection of claims 1-2, and 4-10. Again Scott fails to remedy these defects as discussed immediately above. Therefore, the rejection of claim 11 is improper and should be withdrawn.

(4) The Office rejected claim 14 as being obvious under 35 USC §103 over Cabrera et al. in view of Myers, Green, and Scott. The applicant once again respectfully disagrees. Again, it is pointed out that Cabrera is defective for reasons as discussed above in the rejection of claims 1-2, and 4-10. Myers, Green, Scott fail to remedy these defects as discussed above. Therefore, the rejection of claim 14 is improper and should be withdrawn.

(5) The Office rejected claim 20 as being obvious under 35 USC §103 over Cabrera et al. in view of Myers, and Scott. The applicant yet again respectfully disagrees and points out that Cabrera is defective for reasons as discussed above in the rejection of claims 1-2, and 4-10. Myers, and Scott fail to remedy these defects as also discussed above. Therefore, the rejection of claim 20 is improper and should be withdrawn.

Request For Allowance

Claims 1-20 are pending in this application. The applicant requests allowance of all pending claims.

Respectfully submitted,
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